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THE  
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VOL. XXXVIII

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**ORIGINAL COMMUNICATIONS.**

(Original Communications are received with the understanding  
(that they are contributed exclusively to THE LARYNGOSCOPE.)

**THE EFFECT OF SINUSITIS ON CERTAIN  
SYNDROMES OF CHIASMAL  
TUMOR.\***

DR. HAROLD I. LILLIE and DR. WALTER I. LILLIE,  
Rochester, Minn.

It may be difficult to interpret or evaluate the relative importance of certain symptoms pertaining to the eye in cases of disease of the paranasal sinuses, particularly if they are somewhat atypical, and possibly due to the early effect of chiasmal tumor on the optic nerve.

Because of a wave of enthusiasm among rhinologists with regard to operations on posterior paranasal sinuses for the relief of a syndrome quite removed from the indications as propounded by certain observers in well defined conditions, Cushing has felt compelled to admonish rhinologists to be more careful in the choice of cases for operation. He said: "Were the operations done merely on the chance that the patient complained of obscure headache or visual disturbance in the absence of choked disc, it would be understandable, but when these operations are performed on people with full-blown changes in the optic nerves and with an idea that clearing out the ethmoidal and sphenoidal regions might check the process, we have gone too far." Sluder answered him the following year by saying: "The lesion secondary to postethmoidal and sphenoidal lesions is in all probability an optic neuritis; and by the ophthalmoscope, it may be indistinguishable from that produced by intracranial lesion."

The symptoms for which operation is performed on paranasal sinuses are certain disturbances of vision and headache of obscure

\*Read before the Section on Laryngology and Rhinology at the New York Academy of Medicine, New York City, April 25, 1928.  
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origin. In fact, so much had been written about the possibilities of relief from operations on the ethmoid and sphenoid sinuses, that rhinologists have explored these sinuses in the hope that symptoms would be relieved and in the fear that, if the operation was delayed or not performed, blindness, particularly, would result. In defense of the rhinologist, therefore it could be said that he was placed in a predicament.

Fortunately, as is usual in the practice of medicine, this wave of enthusiasm has been supplanted by one more conservative, largely because of the reported co-operative experiences of rhinologists, ophthalmologists and neurologists, which has made for better understanding of the indications for intranasal operations. Unfortunately, the earlier symptoms of brain tumor may be vague and obscure and a definite diagnosis is not possible until after a period of careful observation. It is in this group of cases that many operations on the posterior paranasal sinuses are performed intranasally. Headache and its significance will remain difficult to interpret and evaluate properly and for this reason, possibly, patients are and will be frequently subjected to intranasal operations in the hope that the distressing symptoms may be relieved. The type of headache which is due to intranasal causes has, however, been fairly well established and it is the experience of rhinologists generally that operations for their relief are usually successful. Operations for the relief of headaches of obscure origin are more than likely to add new symptoms to the old. It is too much to expect that headache due to migraine, eye strain, toxemia and brain tumor, can be relieved by intranasal operations. In a review of cases of proved brain tumor at The Mayo Clinic, it has been found in a relatively high percentage that intranasal or pharyngeal operations have been performed recently.

Paranasal sinus disease undoubtedly affects the optic nerve in certain cases; the ophthalmologic and rhinologic observations are quite characteristic. The same may be said of chiasmal tumor from the ophthalmologic standpoint, but the rhinologic data are not characteristic.

Retrobulbar neuritis, as is produced by paranasal sinusitis, is usually unilateral. Either all vision is lost suddenly, or the central vision is considerably diminished; this may be progressive for a short period, or may appear in episodes, with regression of symptoms. The ophthalmologic syndrome is characterized by complete unilateral amaurosis, or by unilateral central or cecocentral scotoma, and a normal fundus. In a certain percentage of cases true optic neuritis has been observed in conjunction with the foregoing field defects.

Tumors near or at the optic chiasm can produce such an ophthalmologic syndrome, but the onset is usually insidious, and loss of vision is slowly progressive, although fluctuations are not uncommon. The usual perimetric findings are bitemporal scotomatous or peripheral field defect. The fundi are either normal, or both discs exhibit a definite, full, waxy pallor before simple optic atrophy develops. We believe that a definite progression of signs and symptoms, for a certain period of progression, followed by a period of definite regression, is characteristic of inflammation. When a combination of the two, inflammation and tumor, is encountered, as described in Cases 5, 6 and 7, the correct interpretation and the proper therapeutic management may be difficult.

We have observed cases in which it was finally shown that the inflammation and tumor combined were affecting the optic nerve and it was difficult to interpret and evaluate these observations, particularly in the presence of inflammation.

The cases we shall discuss here fall into two main groups: those in which operation on the intranasal pathologic processes did not change the symptoms; and those in which such operation afforded temporary relief of the visual symptoms.

#### GROUP 1.

*Case 1:* A woman, age 45 years, came to The Mayo Clinic for examination because of complete loss of vision in the left eye, and progressive loss of vision in the right eye. Menses had ceased 11 years prior to admission. Five years previously, she began to have severe left frontal headaches, which were more severe at night. Six months later temporal vision began to fail in the left eye. All of the teeth in the lower jaw were removed without improvement in the vision. Three months later a paranasal sinus on the left side was operated on; this relieved the headaches but the vision failed progressively to complete amaurosis of the left eye in two years. A year later vision in the right eye began to fail in the temporal field, identical to that in the left eye, and was progressive to the time of her admission.

*Examination:* Vision in the right eye was 6/60, with complete amaurosis in the left eye. Definite simple optic atrophy was present in both eyes. In the right eye there was temporal hemianopsia; and in the left, complete loss of vision (Fig. 1). The anterior end of the left middle turbinate had been removed. The Roentgenogram of the head showed enlargement of the sella turcica, graded 4, with erosion of the posterior clinoids. The general medical and neurologic

examinations were negative, the basal metabolic rate was —10. The systolic blood pressure was 120, the diastolic, 90.

*Operation:* An intracranial operation was performed and an extensive purplish-gray, definitely encapsulated pituitary tumor was found bulging up between the optic nerves and extending inferiorly and posteriorly to the optic chiasm. Intracapsular enucleation was done, thus relaxing the optic nerves completely. Microscopic examination of the tissue removed showed carcinoma. The patient died five days later. Necropsy was not obtained.

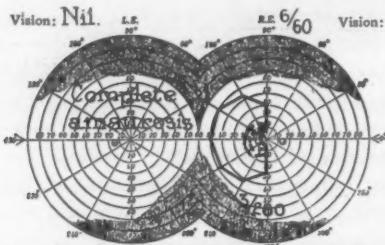


Fig. 1 (Case 1). Right eye: temporal hemianopsia for form and colors, with loss of central fixation; left eye: complete amaurosis.

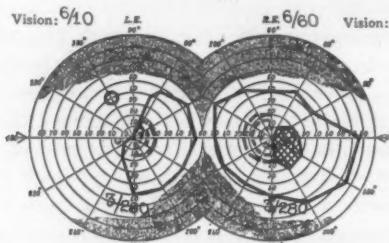


Fig. 2 (Case 2). Right eye: temporal hemianopsia for all colors, blind spot markedly enlarged; left eye: temporal hemianopsia for form and colors, with a small isle of vision remaining in upper temporal quadrant.

*Case 2:* A man, age 44 years, came to the clinic for examination because of failing vision in both eyes. As long as he could remember he had been subject to headaches with nausea and vomiting at intervals of five or six weeks. About a year previously, he had noticed that his vision for small objects was not as good as formerly, and he was troubled with transitory short periods of diplopia. At the same time a new type of headache developed, which he described as a dull, boring pain in the bridge of his nose, extending between the eyes and localizing in the mid-frontal region. The visual failure and head-

aches were progressive and more pronounced. For the last nine years sexual power had diminished, and for the last two years desire was completely absent. Six months before admission, nasal polyps in the right side and a polypoid turbinate had been operated on. This did not alter the progressive visual disturbance.

*Examination:* Vision in the right eye was 6/60 and in the left eye 6/10. Examination of the eyes externally was negative. A full, waxy, pale disc was present, without loss of substance, in both eyes. The perimetric fields revealed temporal hemianopsia for colors in the

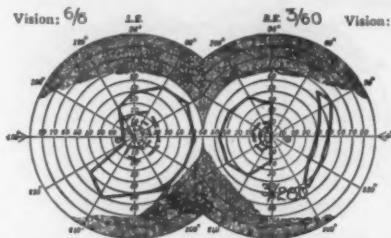


Fig. 3 (Case 2). After intracranial operation. Right eye: temporal hemianopsia for form and colors with a small temporal isle of vision remaining; left eye: irregular temporal hemianopsia for form and colors.

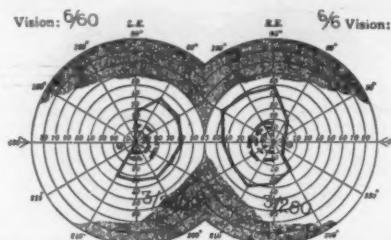


Fig. 4 (Case 3). Bitemporal hemianopsia for form and colors.

right eye with enlargement of the blind spot and temporal hemianopsia for form and colors in the left eye, with a small isle of vision in the upper temporal quadrant (Fig. 2). The general and neurologic examinations were essentially negative, except that the systolic blood pressure was 108 and the diastolic, 80. The basal metabolic rate was —24 on one occasion and —15 on another, which increased to +15 after the administration of thyroid. The Roentgenogram of the sella turcica showed complete destruction. The septum was widely deflected, and there was some pus. Roentgenogram of the sinuses

showed cloudiness of the right antrum, graded 1. The nose was treated medically while the patient was being prepared for intracranial operation, but improvement in vision did not occur.

*Operation:* An intracranial operation revealed a purplish-pink, definitely encapsulated cellular pituitary tumor bulging between the optic nerves at the optic chiasm, which was enucleated and all tissue removed. The pathologist reported the growth to be adenoma. Following the operation the vision had decreased to 3/60 in the right

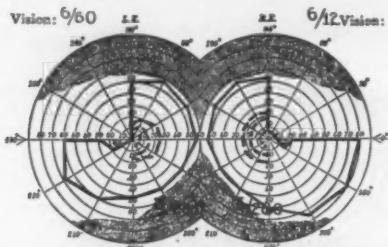


Fig. 5 (Case 4). Bitemporal upper quadrant hemianopsia for form and colors.

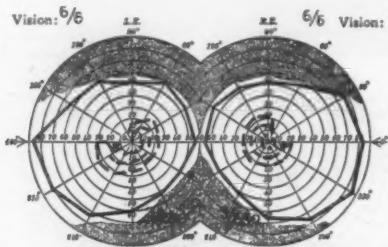


Fig. 6 (Case 4). After intracranial operation. Form fields normal in each eye. Bitemporal upper quadrant hemianopsia for colors. Vision improved to 6/6 in each eye.

eye, but improved to 6/6 in the left. The visual field remained about the same, with some fluctuations (Fig. 3).

*Case 3:* A man, aged 42 years, came to the clinic for examination because of progressive failure of vision for the last three years. The decreasing vision in the left eye was noticed first. A growth in the nose was operated on at this time, but vision did not improve. Four months before admission, vision in the right eye began to fail, and six weeks before, intermittent throbbing headaches developed, with sharp neuralgic pains in the right parietal region, associated with

some vomiting and vertigo. Following this, impairment of memory and inability to concentrate was noticed. The patient lost 30 pounds, and felt weak.

*Examination:* Vision in the right eye was 6/6 and in the left, 6/60. The external examination of the eye was negative. There was pallor of both discs, with some loss of substance. The perimetric fields revealed bitemporal hemianopsia for form and colors (Fig. 4). The general and neurologic examinations were essentially negative. The

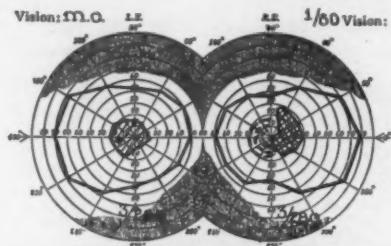


Fig. 7 (Case 6). Form fields concentrically contracted. Large absolute irregular cecocentral scotoma and temporal hemianopsia for colors in right eye. Left eye: relative cecocentral scotoma, with inability to recognize colors.

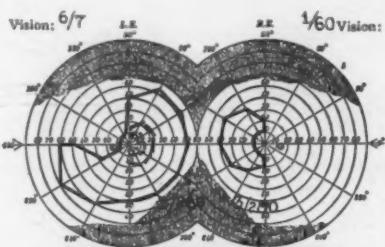


Fig. 8 (Case 6). After intracranial operation. Right eye: temporal hemianopsia for form with loss of central fixation, and inability to recognize colors. Left eye: upper temporal quadrant hemianopsia for form, with complete temporal hemianopsia for colors. Central vision improved to 6/7.

systolic blood pressure was 130, the diastolic, 96. In the Roentgenogram, the sella turcica appeared to be greatly enlarged, with erosion of the posterior clinoids. The basal metabolic rate was —12. Examination of the ear, nose and throat was negative. While the patient was at the clinic he had one generalized convulsion.

*Operation:* Intracranial operation revealed a definitely encapsulated, bluish-gray cystic pituitary tumor. At the completion of the operation, the capsule collapsed and the optic chiasm was released

from all pressure. The pathologist reported the growth to be adenoma. Since the operation, the patient has retained his vision and the fields are not altered.

*Case 4:* A man, age 49 years, came to the clinic for examination because of failing vision in both eyes. He had been well until 11 years previously, when appendectomy was performed. Two years later he had an attack of influenza. He was then well until three years prior to admission when he began to have attacks of vertigo, lasting for a few minutes and recurring every few days. Frontal

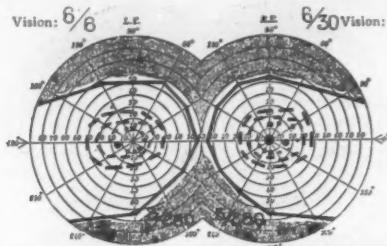


Fig. 9 (Case 7). Absolute central scotoma of right eye. Form and color fields normal each eye.

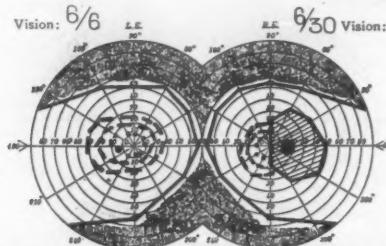


Fig. 10 (Case 7). Right eye: temporal hemianopsia for colors. Large relative cecocentral scotoma; left eye: fields normal.

headaches became severe, but could be relieved by aspirin. Glasses were prescribed, but did not improve vision. Nine months previously an ophthalmologist had noted bitemporal hemianopsia. A Roentgenogram at this time revealed cloudiness of all the accessory sinuses; the patient gave a history of purulent nasal discharge. A month later both antrums, the left ethmoid, and the sphenoid sinuses were opened, but pus was not obtained. From this time on vision grew progressively worse.

*Examination:* Vision in the right eye was 6/12, and in the left eye, 6/60; the fundi were negative. The perimetric fields revealed bi-temporal, upper quadrant hemianopic defect for form and colors (Fig. 5). A large spur was found on the right side of the septum. The turbinates were hypertrophied and there were secondary atrophic changes in the mucosa. The breathing space was limited on both sides and the left antrum window was patent. General and neurologic examinations were negative except that the Roentgenogram of

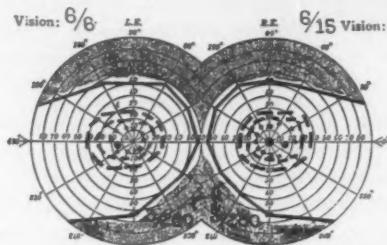


Fig. 11 (Case 7). Two days after patient stopped smoking. Fields normal for form and colors. Absolute central scotoma right eye.

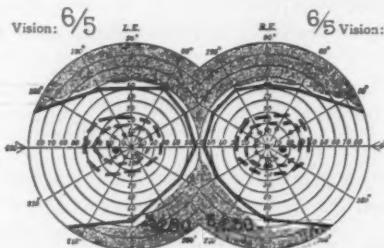


Fig. 12 (Case 7). Six months after patient stopped smoking. Fields normal for form and colors. Vision normal in each eye.

the sella turcica showed enlargement, with destruction of the floor and posterior clinoids. The basal metabolic rate was —11.

*Operation:* Intracranial operation revealed a dumbbell-shaped pituitary tumor, projected against the chiasm, displacing it posteriorly and causing considerable tension on the optic nerves. When the tumor was removed, the optic chiasm and nerves were completely relaxed. Following this, vision improved to 6/6 in both eyes and the peripheral fields returned to normal except for a small upper temporal quadrant defect for colors in both eyes (Fig. 6).

*Comment on Cases 1, 2, 3 and 4:* In the four cases in this group there was a history of intranasal operation during the period of progressive visual failure, but at the time of examination at the clinic the ophthalmologic symptoms were so typical of a chiasmal lesion that intracranial operation was instituted without delay. What the ophthalmologic picture may have been early in the course is not known. It is not easy to explain why relief of the nocturnal headache followed the intranasal operation in Case 1.

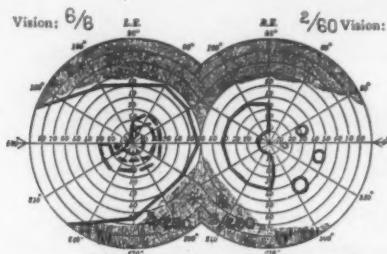


Fig. 13 (Case 7). Right eye: temporal hemianopsia for form, with loss of central fixation. Three small temporal islets of vision; left eye: upper temporal quadrant hemianopsia for colors. Form fields normal.

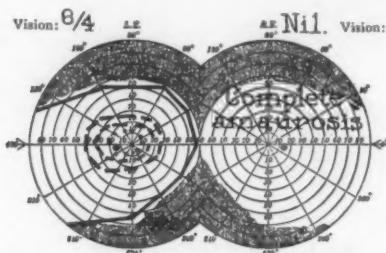


Fig. 14 (Case 7). Two weeks after intracranial operation. Right eye: complete amaurosis; left eye: normal vision and fields.

#### GROUP 2.

\**Case 5:* A woman, age 41 years, came to the clinic for examination because of failing vision of three weeks' duration. The general history was negative except that the menopause had been passed at the age of 36 years.

*Examination:* Vision in the right eye was 6/30, and in the left, 6/15. The extraocular movements were normal. The pupils were

\*Perimetric fields published by Benedict.

equal and reacted promptly. The media were clear and the fundi normal. There was bitemporal hemianopsia. The general examination, including the Wassermann test on the blood, was negative. A Roentgenogram of the head showed a large calcified pineal body. Infection of tonsils was graded 2. There were polyps in the middle meatus on both sides and a considerable amount of pus in the left nostril.

*Operation:* The polyps were removed on the left side and suction and argyrol tampons applied. Following this, vision was much better in the temporal field. One week later evisceration of all the sinuses was performed, with drainage of pus. The temporal fields improved during the treatment and central vision was more acute.

The patient was dismissed a month later; the nose was in good condition. She was advised to return in from six weeks to two months, and she returned in three months. Bitemporal hemianopsia was again found and visual acuity was decreased. An intracranial operation was performed and a pituitary tumor was found bulging in front and pressing out laterally on each optic nerve. The upper portion of the tumor was so cystic that a depression was made in it by the optic nerve. The tumor was not adherent and when the capsule was opened about 8 c.c. of watery, greenish fluid escaped. The pathologist diagnosed carcinoma. After the tumor had been removed the wall of the degenerating cyst collapsed, thus freeing the commissure and optic nerves. During convalescence the fields showed progressive improvement and central vision returned to 6/7 in the right eye, and 6/12 in the left.

The patient returned for observation after two years because of drainage from the old wound. The vision at this time was 6/10 in the right eye, and in the left, 6/6. The perimetric fields had remained unaltered since the operation. Operation was now performed for chronic osteomyelitis of the skull. Uneventful convalescence followed.

*Comment:* The somewhat rapid onset of the visual disturbance without changes in the sella turcica, associated with definite purulent sphenoiditis, and with none of the usual metabolic disturbances of pituitary tumor except the cessation of menses, made the diagnosis of a secondary inflammatory lesion of the chiasm justifiable. This view was more or less supported by the improvement of vision and fields, following treatment of the nose. The perimetric fields did not support the diagnosis of inflammation as they were not the usual type produced by retrobulbar neuritis, namely, the central or cecocentral

scotoma with normal peripheral vision, but were rather the common type of field change produced by pressure on the chiasm due to the growth of a tumor. The subsequent course of events clarified the situation and intracranial operation proved conclusively the nature of the lesion. The gain in visual acuity and the widening of the temporal fields following the removal of the pituitary tumor was much greater than that following the intranasal operation. Also, the gain had been constant. In retrospect, the purulent sphenoiditis probably rapidly precipitated the visual disturbance, as the progressive loss of vision is usually slow in cases of uncomplicated tumor of the pituitary gland.

*Case 6:* A man, age 41 years, came to the clinic for examination because of failing vision of both eyes. The general history revealed syphilitic infection at the age of 17 years, with four months of treatment with mercury inunctions and potassium iodid. He had married and his wife had borne two healthy children and had had one miscarriage. The patient had been well until one year before coming to the clinic, when, following an attack of herpes zoster ophthalmicus on the right side, the vision gradually began to fail. The failure was equal in both eyes, and seemed to affect the entire field of vision equally. He was examined eight months later and bitemporal scotomatous field defects and pale optic discs were elicited. The Roentgenogram of the head and accessory sinuses revealed a calcified area over the sella turcica, and increased density of the anterior and posterior ethmoid sinuses on the right side. It was concluded at this time that the optic chiasm was affected, due either to sinus infection or intracranial disease. The sinuses were operated on and only slight evidence of infection was found. The day following the operation, the patient felt that the vision was improved, but the next day it was the same as before. Two months later he was again examined at The Mayo Clinic.

*Examination:* Vision in the right eye was 1/60, and in the left eye ability to perceive moving objects. Examination of the eye externally was negative. There was pallor of both discs, without loss of substance. The perimetric fields showed an irregular concentric contraction of the peripheral fields, bilateral, large cecocentral scotoma, and a temporal hemianopsia for colors in the right eye, with inability to recognize colors with the left eye (Fig. 7). The general and neurologic examinations were negative, except for mild leukocytosis, 13,200 cells; the examination included a Wassermann test of the blood and spinal fluid. A Roentgenogram of the head showed a shadow over the sella turcica, and that of the accessory sinuses

cloudiness of the right antrum, graded 3. The tonsils were enlarged and septic. Bilateral partial middle turbinectomy had been performed. Because of the leukocytosis, history of herpes zoster and bilateral cecocentral scotoma, tonsillectomy was performed, although the patient was told that later an intracranial operation would have to be resorted to. Following the tonsillectomy, he was sent home, with instructions to return in two months. He returned three months later without any visual improvement, although vision had improved for a week. He could now only count fingers. The perimetric fields were practically the same as before. Pus was found in the left middle meatus. A diagnostic exploration of the sphenoid and maxillary sinuses was negative.

*Operation:* An intracranial operation was performed one week later and revealed a large dark mass just above the chiasm, coming apparently from the region of the uncinate and hippocampal gyri. The mass was not removed. Five courses of radium were given in the nasopharynx during the next two years and the vision improved in the right eye to 1/60, and in the left eye to 6/7. The perimetric fields fluctuated, but assumed a bitemporal hemianopic character (Fig. 8). The patient died three years later at his home.

*Comment:* Early in the course of the visual disability the symptoms were not of a type to show that the lesion in the nose was a factor in producing the ophthalmologic picture. Although a pituitary tumor had been suspected rather early, the typical perimetric field defects were not present on the first examination. The presence of bilateral cecocentral scotoma was sufficient evidence of an inflammatory cause to warrant intranasal treatment first, even though the Roentgenogram of the sella turcica showed pathologic change.

The improvement following the intranasal operation was subjectively definite, but transient. It is difficult to explain the improvement, but the local blood letting due to the intranasal operation is suggestive as a cause. Later, the clinical course revealed a definite ophthalmologic syndrome of pituitary tumor and the intracranial operation proved the basic pathologic condition.

*Case 7:* A man, age 37 years, first came to the clinic because of a noticeably bad breath. One year previously he had had several infected teeth and infected tonsils removed because of rheumatism.

*Examination:* The ears, nose and throat were normal, but a Roentgenogram of the accessory sinuses revealed cloudiness of the right antrum. Puncture of the antrum gave negative results. Removal of the remaining infected teeth was advised.

Fifteen months later, the patient returned because of failing vision in the right eye. Two months previously the left eye became sore and vision of the right eye was markedly diminished. The perimetric fields at this time revealed inversion of colors in the right eye. A Roentgenogram of the sella turcica showed enlargement, and a pituitary tumor was suspected. On his arrival at the clinic, vision in the right eye was 6/30, and in the left, 6/6. Examination of the eye externally was negative. The fundi were normal. The perimetric fields were normal for form and colors, but a definite small absolute central scotoma was present in the right eye (Fig. 9). The general and neurologic examinations were negative, except that the basal metabolic rate was —15, and the Roentgenogram of the sella turcica showed enlargement, graded 3, with thinning of the posterior clinoids. A diagnosis of retrobulbar neuritis was made, and since the visual changes were not severe enough to warrant radical operative procedures, the patient was advised to return in six months.

The patient returned in three months. In the interval, the accessory nasal sinuses had been operated on with some improvement in the vision for a few days. Since then the vision had been about the same as before. Vision in the right eye was now 6/30, and in the left, 6/6. The perimetric fields of the right eye were normal for form, but there was temporal hemianopsia for colors. The blind spot was slightly enlarged, associated with a large relative scotoma filling the greater part of the temporal field (Fig. 10). The patient had been smoking excessively recently, and was advised to stop. Two days later the vision in the right eye improved to 6/15, and the perimetric fields returned to normal for form and colors, but the original central scotoma remained (Fig. 11). Again intracranial operation was not urged, and the patient went home. He returned after six months. Vision in the right eye had been normal for the last four months; he had stopped smoking entirely. Vision in both eyes was 6/5, and the perimetric fields were normal for form and colors. Central scotoma could not be elicited on the right (Fig. 12). The fundi were normal. He was again told that nothing further should be done at this time.

He returned 15 months later complaining that the vision in the right eye had failed rapidly during the last two months. At this time the vision in the right eye was 2/60, and the left, 6/6. Mild pallor of both discs was present. The perimetric fields revealed temporal hemianopsia for form with three small temporal isles of vision in the right eye, and a small upper temporal notching for colors in the left eye (Fig. 13). The results from general and neurologic exam-

inations were the same except that the basal metabolic rate was now —25. Because of the definite chiasmal field defects at this time, intracranial operation was advised.

*Operation:* Operation revealed an encapsulated bluish-gray oval pituitary tumor causing posterior displacement of the optic chiasm with the greater pull on the right optic nerve. On completion of the operation the capsule collapsed completely, which relieved all pressure on the optic nerve. The pathologic diagnosis was carcinoma.

Following the operation, the vision in the right eye decreased to complete amaurosis, while the perimetric field in the left eye returned to normal and the vision improved to 6/4 (Fig. 14).

*Comment:* The fluctuating ophthalmologic symptoms in this case were those of unilateral retrobulbar neuritis. A pituitary tumor was suspected early because of the appearance of the Roentgenogram of the sella turcica. Continued visual improvement which followed abstinence from smoking was rather striking, even though the nasal sinuses were operated on elsewhere during this period. The improvement in vision following the nasal operation was definite, but disappeared after three or four days. Intracranial operation was urged only when perimetric fields revealed bitemporal hemianopic defect. We believe that the clinical course was well directed in this case, since the visual defect was too fluctuating and not severe enough to warrant an early intracranial operation.

#### SUMMARY.

Disease of the paranasal sinuses may be associated with chiasmal tumor and cause disturbances of vision not typically characteristic of either causative factor. Surgical treatment of disease of these sinuses will eliminate this factor and for obvious reasons should be instituted before the intracranial operation for chiasmal tumor.

The ophthalmologic syndrome of chiasmal tumor is characteristic and constant, whereas the ophthalmologic syndrome due to disease of the paranasal sinuses is not.

The rhinologic manifestations of disease of the paranasal sinuses are not always characteristic and its relative importance, so far as visual disturbances are concerned, is difficult to evaluate. At least, the incidence of visual disturbance in frank disease of the paranasal sinuses is extremely low.

This type of patient should be observed over a sufficient period so that a satisfactory diagnosis may be reached. These observations

should consist of teamwork of the ophthalmologist, neurologist and rhinologist.

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Mayo Clinic.

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### NASAL POLYPI IN AN EIGHT-YEAR-OLD CHILD. CASE PRESENTATION.\*

DR. ALFRED MICHAELIS, New York.

This boy, who was examined by some of the members of the Section before the meeting, was seen by me on June 7, 1927, 11 months ago, suffering from nasal obstruction of the left side and nasal discharge. This had been present for a long time. He was then age 7 years and 10 months. I had operated on him four years ago for the removal of tonsils and adenoids. Examination showed profuse discharge from the nose and also postnasal discharge, apparently an acute purulent rhinitis. The sinuses were clear by transillumination.

Shrinkage of the nasal tissues with a mild solution of cocaine and adrenalin was not enough to permit inspection of the deeper parts of the nose. Five days later it was possible to do so. The region of the middle turbinate and middle meatus did not show any pathology. There was, however, complete stenosis of the left side. This made me think of congenital stenosis (bony), such as I had described to the Section a number of years ago. Closer examination disclosed an obstructing mass completely filling and blocking the choanae—a large polyp.

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A week later I attempted to remove the mass. This proved to be very difficult on account of the small nasal chamber in so young a patient and especially because of the child's natural fear and resistance. A number of fruitless attempts were made and at the third trial two small pieces were detached, the removal being accompanied by a slight discharge of amber-colored fluid, pointing to cystic polyp. The instruments used were the regulation-sized nasal snares.

Numerous trials over many weeks proved that the snares were too large for the working space and on Sept. 24, three months after the first attempt, I was able to engage and remove the mass with this "baby snare". You will note that this is really an ear snare, but it proved suitable for working in a space not much larger than the ear. Removal was accompanied by a gush of amber-colored fluid, as at first. The obstruction of the nose was entirely relieved and with it subsequently disappeared an obstinate cough, evidently reflex. You will note that this growth, Specimen No. 1, is a large multiocular cystic polyp.

Three months later there was a recurrence of obstruction and more polyp, Specimen No. 2, was removed. A month-and-a-half later obstruction was again complained of, and more polyp, Specimen No. 3, was removed. After each removal there appeared to be nothing left. About the time of this Section meeting, three months after the last removal, there is seen a fresh recurrence of polyp. In every instance the origin of the growth is the same, behind the middle turbinate.

*Comment:* This is a case of ethmoiditis, and in particular of the posterior ethmoidal cells which drain into the superior meatus. The origin of the polypi from this region points to this diagnosis. The X-ray pictures confirm the clinical diagnosis. The latter also are supposed to show "probably polyp tissue in the antrum of the same side".

The unusual feature of this case is the presence of pathology—polypi—in so young a subject. Their presence and recurrence remind one of parallel cases seen, however, only in adults. The hope that removal of the polyps would afford better ventilation to the sinuses and consequent improvement in the chronic inflammation does not seem to be realized. I do not look forward with pleasure to more radical surgery in this young and unwilling patient.

5 West 91st Street.

## RHINOLALIA APERTA AFTER TONSILLECTOMY.

DR. D. L. POE, New York.

In view of the large number of tonsils and adenoids that are daily removed, consequent speech imperfections seem to appear relatively infrequently. The musculature that is traumatized during the surgical removal of tonsils and adenoids is so intimately associated with the muscles for the production of speech that more frequent disturbances in its productions would be expected. That the contrary occurs must be attributed to the dexterity and skill of the modern well-trained laryngologist, to the progress of the surgery of these organs and to the recuperative powers of the individual as well as to special adaptability of the various parts for the carrying out of given functions.

While the percentage of speech disturbances of those that undergo the surgery is small, the aggregate, however, is fairly large. If we take the temporary imperfections into consideration it must be admitted that the percentage of affection is immeasurably increased. This paper, however, is not written to cover the temporary ailments, which pass off in a day or two, but rather to report and discuss a more important phase.

While at the outset of this paper it was stated that, comparatively speaking, disturbance in the mechanism of speech is infrequent, it nevertheless occurs, and when it does it may become exceedingly exasperating both to the patient as well as to the surgeon. It is with this point in mind that the several cases, which have recently come under observation, are being reported, and fully treated.

Several years ago, F. Z., the daughter of a D.D.S., while a young child, was operated upon by a highly respected, well known surgeon. Father, mother, as well as other members of the family, state that the child had a fine, clear, ringing tonal quality in its voice prior to the removal of its tonsils and adenoids. Its music teacher had the same to say. Immediately after the operation the child's speech had a decidedly nasal quality. The laryngologist assured the family that the disagreeable tone would disappear in a few days and, resting upon this assurance, the parents' uneasiness subsided. But, while the nasalizing did somewhat abate, it did not entirely vanish, and today, after several years' interval, it still persists. In addition, the child

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acquired a peculiar muscular tugging and pulling of its nasal alae while talking, so that, what otherwise would be an attractive, lovely face, becomes distorted and unattractive. The young lady is naturally an intelligent, vivacious person—a type in whom one would expect the face to brighten and add to its attractiveness when speaking. The contrary really takes place. The nasaling tonal characteristic jars the listener's ears, and the concomitant muscular twitchings about the tip of the nose markedly detracts from what otherwise would be a good looking girl.

G. Z., sister of F. Z., age 5 years, shortly after having her tonsils and adenoids removed, also showed evidences of nasaling in her speech, but under proper guidance, it was soon corrected and the voice became normal in quality.

V. G., age 12 years, a first cousin of the above mentioned girls, an intelligent girl, after having her tonsils and adenoids, plus some epipharyngeal fibrous tissue, removed, nasaled most shockingly when she attempted to speak. Examination of her soft palate at the time of uttering vowels with her mouth wide open, disclosed an absolutely immobile organ. The nasaling continued a number of days. The parents were very much alarmed, and having their nieces' experience as a constant reminder before their eyes, practically all reassurances failed to comfort them. Under careful treatment the disturbance finally disappeared.

One month afterwards, two boys, D. C., age 6 years, and S. C., age 9 years, first cousins of the above mentioned three girls, simultaneously had their adenoids and tonsils removed. They, too, in their attempt to speak, nasaled. Their disjointed speech was not as defective as that of the female members. The 6-year-old boy's speech was soon corrected, offering no trouble to the physician. The older brother's speech, six weeks after the operation, is still heavy with nasal tones.

We note five children, belonging to the same family tree, having undergone the same type operation, each one in attempting to speak did so with a greater or less admixture of nasal tone quality. In one child, F. Z., the imperfection persists after a lapse of several years. In the second, G. Z., the disturbing factor disappeared several days after making its appearance. In the third, V. G., the nasaling was extremely discomforting to the physician and family. It disappeared in a comparatively short time, but not until the physician had taken the patient well in hand to correct the defect. In the fourth child, D. C., the nurse, having been instructed the course to pursue to prevent the occurrence of nasaling, the patient made an

uneventful recovery after being instructed how to talk. The fifth, S. C., nasaled after the operation hideously, under treatment he became better, and today, six weeks after the operation, still permits the nasal cavities too much participation in the production of speech.

The method of treatment to correct the defect was mostly educational. When, however, we found that educational treatment fell somewhat short in bringing about a total correction, mechanical methods were also employed.

The unnatural nasaling of speech is practically entirely due to a lack of physiological function of the soft palate. In uttering words, which do not possess a nasal character, the soft palate normally shuts off the nose from the oropharynx in such manner that the greatest amount of the vibrating current escapes from the mouth and only a minimum of air comes into relation with the nasal chambers. If, however, the soft palate hangs loosely at a time when it should be taughtly stretched to the posterior pharyngeal wall, the nasopharynx communicates with the oropharynx and vocal air blasts, which should escape by way of the mouth only, enters more freely into the nasal cavities. The sound which normally should be metallic is now abnormally nasal.

Since lack of physiologic function of the soft palate is the cause of the unpleasant nasaling, the remedy lies in bringing back a normal action of the organ. It is very difficult, indeed, to say which method is the best to bring about the desired results. It is safer to say that it is a combination of methods or procedures which finally brings about a complete correction. The first in order of the remedial agencies is massage of the soft palate. This can best be done with the tip of the finger while the member hangs loosely, or while it is somewhat innervated, especially when the patient is uttering the "ah" vowel.

Electric current to the soft palate can also be used. Some authorities massage the organ with instruments. A handy instrument consists of a wire, to one end of which a polished, broad metal spoon is attached, which is applied to the palatal tissues, the other end of the wire extends out of the mouth and is bent into a convenient handle, by means of which the instrument can be manipulated. With this device the soft palate can be raised and lowered, assisting its natural tendency while sound is being uttered. Instrumentation is quite useful in its place, particularly when applied to grownups. Nervous, fretful children do not lend themselves easily to that type of treatment. They not only do not co-operate, but actually offer direct resistance.

In a study of the physiology of the pharynx when sound is forcibly produced, the musculature is seen to contract and a prominence, known as the Passavant prominence, is formed. This swelling decreases the pharyngeal lumen and assists the soft palate in shutting off the oro from the nasopharynx. In some people this projection is prominently developed, while in others it is rather rudimentary. The musculature forming this Passavant prominence is intimately connected with that of the larynx below and the palate above. When the muscles of the pharynx are energetically set into motion the soft palate is also drawn into action. One of the easiest methods by which the pharyngeal musculature can be set into activity without the use of instruments is to utter an energetic tone; *i. e.*, the tone should be attacked vigorously, loud and in a pitch higher than the person's normal conversational voice. By this method the muscles of the larynx are strongly set into play, the activity is communicated to the pharynx and from thence to the soft palate.

Most frequently patients, especially children, finding it painful to talk shortly after a tonsillectomy, attempt to spare themselves as much suffering as possible. They either do not talk at all or when they do speak they do so with the least amount of exertion. They soon learn that allowing their soft palate to hang loosely without any contraction while speaking gives the least amount of pain. In addition the soft tissues about the tonsillar beds may also be very edematous and for that reason almost immovable. Speaking without innervating the soft palate, if frequently repeated, soon becomes a habit. In due time the individual may even forget how to properly innervate the member as an accompaniment to normal speech, especially if the person be neurasthenic.

#### THERAPY.

In the early stages of nasaling, *i. e.*, in attempting to speak very soon after a tonsillectomy is performed, speech is accompanied with a pronounced nasal complement, usually a change in the manner of delivery is sufficient to correct the imperfection. For instance: The patient utters a sentence or phrase quietly, slurring over the words, imperfectly enunciated. Have the individual pronounce the words with some gusto and the nasaling will frequently disappear. In the case of the two children, the girl, age 5 years, and the boy, age 6 years, herein reported, the nurses were instructed that at the first signs of nasaling by the children when speaking, they were to immediately apply gentle firmness in ordering the youngsters to repeat the words with greater energy and pronouncing them more distinctly. As a result their nasaling soon disappeared and remained perma-

nently corrected. I hold that nurses, parents and other attendants must not permit children to slovenly slur their words after the third day of the operation. Good, clear enunciation must be insisted upon if no speaking abnormalities are to be permitted to develop.

In those children in whom the foregoing does not bring about the desired results, massage of the soft palate may be resorted to. The massage should be physiologic; for instance: in uttering energetically abba, resting awhile on the first b, a relatively strong air pressure against the soft palate from below upwards is exerted. In this exercise the small curtain is forced upward. The last syllable, ba, should be emitted as an explosive. In so doing the upward pressure on the soft palate is suddenly released and it rebounds downward. Movement in the soft parts are thus brought about without disagreeable instrumentation. Another excellent exercise is to use the syllable appa. At the time that the first syllable, ap, is uttered the patient should grasp the alae of the nose, compressing them so that no air can escape. The ap syllable should have a staccato sound. The person must rest upon the first p for five or ten seconds, then suddenly release the second explosive syllable and releasing the hold on the alae of the nose. The second syllable must be sounded louder than the first. This exercise brings about considerable movement of the laryngeal, pharyngeal and palatal musculature, and if correctly performed, it is often surprising how quickly the nasaling is corrected. When a clear appa is pronounced it is necessary to pass to other vowels and then combining other consonants, and then gradually passing on to words and phrases. The exercises must be continually repeated until they become a part of the flesh and blood of the person. Fatigue must be avoided. It would be a good procedure to practice three or four minutes and then to rest two minutes. In passing from the "a", pronounced as in father, other vowel combinations must be taken up, as appo, oppo, appoo, oopoo, uppu, uppa, appi, ippa, oppi, ippo, etc. The following words may serve as guide: appal, apparat, appeal, apply, appoint, appraise, opal, opaque, oral, oppress, ordeal, orchid, omit, ordain, ordeal, keel, keg, kink, epic.

Sentences: Bring papa an orchid. etc.

Again it must be emphasized that we have attained our goal quickest when the first vowel was ushered in with a fast, sharp attack somewhat in a louder pitch than normal and the last vowel finished with a sharp explosion in a still higher pitch than the first.

There have been times when these exercises were insufficient to bring about complete satisfactory results. A trace of nasal admixture continued to persist, of which, some time the patient was un-

aware. It must not be understood that normal vocal tone is altogether free from all admixture of nasal sound. A certain amount is necessary, as speech, without it, would sound dead. Richness of voice frequently depends upon the vibrations coming from the nasal cavities. But beyond a certain point it mars its purity and may even become disagreeable. To correct small traces of nasaling, which could not be corrected with our routine speaking exercises, we borrowed an instrument from Dr. Hugo Stern, Vienna, that has served us quite satisfactorily. The instrument consists of a soft rubber tube, to one end of which we attach an olive made of hard rubber or metal, which fits tightly into the patient's nostril, to the other end we attach a hard tip, which is inserted into the patient's ear. Now, when the patient speaks the sound waves are conducted to his own ears, which brings the nasaling to his consciousness. Through repeated effort he attempts to control the excessive amount of undesirable sound.

It would be interesting for each physician to try out his own voice through a tube of this kind, in order to observe that, what he thought was tone totally free from nasaling, is in reality composed of a rich admixture of the same. In this manner he can soon learn of many fallacies in his own voice, which otherwise escapes his attention.

The physician must teach the patient by first giving the sound himself. Children learn quickest through imitation. In guiding the production of words, however, the physician must make every effort to teach the production of an uncramped sound. No word uttered should give evidence of its being choked in the larynx. It must be produced with what singers term an open larynx and should be placed forward. Such a tone, when mastered, not only shows the least evidence of impurity, but is produced with a minimum of effort, at the same time possessing a maximum of carrying power. When properly produced it is a most agreeable, pleasant and attractive sound.

There probably might be an inclination to attribute the rhinolalia aperta following a tonsillectomy and adenectomy to a possible faulty surgical technic, therefore it might be stated that four different rhinolaryngologists did the surgery in the five cases herein reported. Each one of the four men stands high in the profession, each having had many years of experience. The rhinolalia aperta can hardly be the result of a deficiency of surgical skill.

In addition to these patients, the writer recalls others, among whom one case stands out particularly prominent. It concerned a physician whose name is as well known in circle of rhino-laryngology in this

country as in Europe, who, after removing the tonsils and adenoids of a child belonging to an intimate friend, found himself facing a most disagreeable nasalizing when the child commenced speaking. The eminent doctor's chagrin can hardly be described when he found the unpleasant sound persisting. It was only after the special department for the correction of defective speaking at his hospital took the child well in hand that the disturbance finally disappeared.

We must conclude that since defective speech occurred in little patients after being operated by men whose surgical skill has been recognized by conferees for years, the same may occur to anyone without it being due to some error in surgical technique.

When it does happen, experience teaches us that when proper measures for its correction are immediately instituted a reasonably high degree of success may be awaited.

171 W. 57th Street.

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#### PACIFIC COAST OTO-OPTHALMOLOGICAL SOCIETY

The next meeting of the Pacific Coast Oto-Ophthalmological Society will be held in Salt Lake City, Utah, on July 1-3, 1929.

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#### TESTIMONIAL DINNER TO DR. JAMES F. MCKERNON.

On January 9, 1929, the Faculty Association of the New York Post-Graduate Medical School and Hospital is extending a Testimonial Dinner to Dr. James F. McKernon. Dr. McKernon is retiring as president of the hospital, after giving the best years of his life to the institution. He is retaining a membership on the Board of Directors. Among the speakers at the dinner will be: Dr. J. M. T. Finney, of Johns Hopkins; Dr. Livingston Farrand, president of Cornell University; Dr. Edward H. Hume and Dr. Arthur Chace, of the New York Post-Graduate Hospital.

## OTITIC PYEMIA WITHOUT SINUS THROMBOSIS.\*

DR. T. E. BEYER, Denver.

Despite the exhaustive studies of Hessler<sup>1</sup>, Leutert<sup>2</sup>, Jansen<sup>3</sup>, Brieger<sup>4</sup> and Kopetzky<sup>5</sup> there is no unanimity among otologists regarding the pathogenesis of pyemia complicating otitic sepsis. The subject is of vital importance because dependent upon it are the indications for surgical intervention.

That pyemia may occur without involvement of the lateral sinus was first noted by Schwartze<sup>6</sup> in 1885. He concluded empirically that systemic infections may result from thrombosis of the small diploic mastoid veins. Körner<sup>7</sup> came to the same conclusion and from a compilation of some 50 cases described the syndrome of osteophlebitis-pyemia.

Körner's osteophlebitis-pyemia is no longer accepted as a disease entity. There is apparently little pathologic evidence to support it nor can it be distinguished clinically from sinus thrombosis either by its course, the location of metastases or prognosis.

Hessler<sup>8</sup> furnishes another hypothesis. He reasons that infected thrombi originating in the small diploic veins grow into the lumen of the sinus, where small emboli are broken off and carried away by the blood stream. Thus he would account for metastases in the absence of thrombosis in the lateral sinus.

Brieger<sup>9</sup>, while admitting that pyemia is not dependent upon thrombosis, finds no histologic proof for Körner's hypothesis. In agreement with Weigert<sup>10</sup>, who showed the durchwanderung of bacteria through the intact sinus wall, he contends that direct invasion, without attendant thrombosis, into the blood or lymph stream may occur.

Leutert<sup>11</sup> and Heine<sup>12</sup> ascribe such cases to the presence of mural thrombi; but Urbantschitsch<sup>13</sup>, while recognizing the possibility of diploic vein infections, always advises ligation in the presence of metastases.

Schwabach<sup>14</sup>, Brühl<sup>15</sup>, Alexander<sup>16</sup>, Turner<sup>17</sup>, Shambaugh<sup>18</sup>, Smith<sup>19</sup> and Politzer<sup>20</sup> are in agreement that pyemia without sinus thrombosis occurs, the majority ascribing such instances to involvement of the venules of the cellular walls.

\*Read before the Medical Society of the City and County of Denver, Sept. 18, 1928.

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Opposing these views is Leutert<sup>21</sup>, who considers osteophlebitis-pyemia a mere theory, which ought to be discarded. From his recent laboratory work he draws two important conclusions; the first, that metastases point as a rule to thrombosis of some standing; the second, that a positive blood culture from the lateral sinus is evidence of sinus thrombosis.

Jansen<sup>22</sup> found in 63 operated cases only three in which he failed to demonstrate thrombosis of the sinus or bulb, and only one which could be classed as osteophlebitis-pyemia. His contention that the number of cases of osteophlebitis-pyemia becomes insignificant as all the adjacent sinuses and bulb are examined cannot be gainsaid. However, he grants that direct absorption of toxins and bacteria into the blood stream may occur in children and infants, but in adults only rarely.

To Oppenheimer<sup>23</sup>, Dench<sup>24</sup>, Libman and Cellar<sup>25</sup> bacteremia in the presence of suppurations of the middle ear or mastoid is proof evident of infective thrombosis warranting operation.

The experimental work of Heyman<sup>26</sup> has a direct bearing on this subject. Heyman showed quite conclusively from experiments on dogs and monkeys that bacteria are able to penetrate directly through the intact sinus wall. Thrombosis, then, is but a defense reaction produced by pressure in the presence of infection. The recent work of Lillie<sup>27</sup> gives added weight to this argument.

That conditions for direct invasion of the sinus are unusually favorable is obvious. The outer sinus wall is thin, being just the outer sheath of the dura, and cannot withstand infections as can the dura of the middle fossa. Then, too, in periphlebitis the lymphatic channels establish a direct connection with the endothelium of the sinus.

There are many cases on record which agree in the main with the clinical picture described by Körner. Zaalberg<sup>28</sup>, Taylor<sup>29</sup>, Kiehle<sup>30</sup>, Seydell<sup>31</sup>, Bacon<sup>32</sup>, Grünert and Zeroni<sup>33</sup> and others have described cases proven by operation or recovery, while Mumby and Jowett<sup>34</sup>, Boot<sup>35</sup>, Phillips<sup>36</sup>, Panse<sup>37</sup> and others have reported cases proven post-mortem.

To these may be added the following case reports:

*Case 1:* C. C. M., age 61 years. Illness began with a severe cold on April 18, 1927. Tinnitus, fullness, pain and marked deafness of left ear. Had an electric fan "blow" on ear for relief of pain. Large quantities of aspirin for the past two weeks.

Examination, May 2, 1927: Left membrana tympani markedly inflamed and bulging, but no drooping of postsuperior canal wall. Tenderness over mastoid antrum.

X-ray, May 4: Cloudiness of entire left mastoid. Intercellular markings lost.

Operation, May 4: Ether anesthesia. Simple mastoidectomy. Cellular structure soft and necrotic. Liquid pus. Dura and sinus not exposed. Bloodclot closure. Culture from mastoid shows pneumococcus Group IV.

Complications:

	Temp.	Pulse	W.B.C.	Polys.	Hb.	Symptoms
May 7	101-102	80-90	—	—	75%	Delirious.
May 8	102-105	90-100	19000	89%	—	Delirious, vomiting.
May 9	105-102	90-100	—	—	—	Delirious, vomiting.
May 10	102-106	80-100	16200	91%	—	Delirious, hiccough, vomiting. Pain, right ankle.
May 11	102-104	80-100	16800	93%	—	Involuntaries. Pain in ankles.
May 12	102-105	100-105	<i>Blood culture pos.</i>	—	—	Involuntaries. Convulsions. Ankles inflamed.
May 13	104-1-2	80-90	—	—	85%	Rational. Pain, shoulder and ankles.
May 17	98-100	70-80	14200	—	—	Rational.
May 30	98 -	80 -	—	—	—	Periarticular abscesses opened.

*Case Summary:* Following a simple mastoidectomy, in which neither dura nor sinus had been exposed, the patient developed symptoms of meningitis. On the fifth day metastases into the periarticular tissues of both ankles took place. The next day blood culture showed the same organism as recovered from the mastoid, pneumococcus Group IV. Recovery without operation on sinus.

*Comment:* The patient's symptoms suggested meningitis rather than sinus thrombosis. There had been no chills nor were there any local signs (as Griesinger's or Gerhardt's) to suggest involvement of the sinus. Spinal puncture was not permitted, hence we were denied that diagnostic aid. Schwartz<sup>38</sup> reported a similar case.

*Case 2:* J. D., boy, age 5 years. Bilateral suppurative otitis media for two weeks. Past 48 hours a great deal of pain and fever, also some tenderness and edema over both mastoids. On entrance to hospital, temperature 103°, W. B. C. 15,600, polys 74 per cent, R. B. C. 4,620,000, Hb. 85 per cent, urine negative.

X-ray: Confirms clinical diagnosis.

Operation, Dec. 17, 1927: Ether anesthesia. Simple mastoidectomy. Extensive necrosis of both mastoids. The sinuses and dura were not exposed. Bloodclot closure. Culture from both mastoids showed streptococcus viridans.

Postoperative Course: Temperature dropped to normal in three days and patient discharged from hospital in good condition on Dec. 24, 1927.

Returned to hospital:

	Temp.	Pulse	W.B.C.	Polys.	Hb.	Remarks
Dec. 27, 1927	99-105	120-130	—	—	—	Pain, both hips.
Dec. 28, 1927	99-105	120-140	—	—	—	Postauricular incisions opened.
Dec. 29, 1927	99-105	120-140	27400	87%	68%	Pain, right hip.
Dec. 30, 1927	99-104	120-140	19800	87%	66%	Pain, right hip.
Dec. 31, 1927	101-105	90-130	—	—	—	Chills. Pain, right leg.
Jan. 1, 1928	99-101	90-110	Bld. culture neg.	—	—	Chills. Pain, right leg.
Jan. 2, 1928	101-103	100-130	—	—	—	Trephine of right femur.

Septic temperature continued until Jan 22, when on account of osteomyelitis the right femur was opened and drained. Culture; strept. viridans.

*Summary:* Patient, age 5 years, 10 days after operation, in which neither sinus nor dura had been exposed, developed metastases in the right hip. Culture from hip showed strept. viridans, the same organism as recovered from mastoid. Pathological dislocation of hip, and destruction of head of femur. Recovered, but lame. Sinus not operated.

*Comment:* Though there were no local signs, the chills, septic temperature, and loss of hemoglobin were strongly suggestive of sinus thrombosis. However, as blood cultures were negative and there were no further metastases the sinuses were not explored.

*Case 3:* H. H., girl, age 9 years. Acute suppurative otitis media of left ear, which had been under treatment for the past two weeks. On April 29, 1928, patient developed an acute arthritis of the left ankle, the joint being greatly swollen, hot and tender. Temperature 103°, pulse 140, W. B. C. 14,000.

*X-ray:* Shows cloudiness of all structures, with no areas suggesting necrosis.

*Operation, April 29, 1928:* Simple mastoidectomy. Hemorrhagic type of mastoid. No free pus. Sinus and meninges not exposed. Culture from mastoid shows diplococci and short chains. Bloodclot closure.

*Case Summary:* Patient, age 9 years, suffering from acute suppurative otitis media for two weeks, developed metastases in the left ankle. Recovery without operation on sinus.

#### CONCLUSIONS.

There are mild cases of pyemia complicating middle ear and mastoid suppurations that recover without operation on the lateral sinus. Whether these result from diploic vein thrombosis, mural thrombi, direct invasion of the blood or lymph stream or thrombosis of the jugular bulb cannot be definitely determined.

The development of this complication can evidently not be avoided.

Positive blood culture is not an absolute indication for exploring the lateral sinus.

There are no signs or symptoms pathognomonic of sinus thrombosis. A reliable diagnostic aid in such cases as above described would be invaluable, for ablation of the normal sinus in cases of pyemia without thrombosis is not only useless, but, as Heyman<sup>39</sup>, Heine<sup>40</sup> and others have shown, dangerous.

Kopetzky<sup>41</sup> finds red blood cell and hemoglobin estimations of great diagnostic value. His view that changes in the morphological forms of polynuclear cells have both diagnostic and prognostic value is not shared by Gale<sup>42</sup>, who finds them of little value. In tuberculous infections Fishberg<sup>43</sup> has found the index unreliable.

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## A CASE OF COMPLETE FACIAL PARALYSIS AND MENINGITIS DURING ACUTE MASTOIDITIS.\*

DR. DAVID N. HUSIK, Philadelphia.

This case of facial paralysis and meningitis during an acute mastoiditis is reported not on account of its rare complications, for facial paralysis during an acute mastoiditis is not an uncommon complication, nor is meningitis; but the simultaneous onset of the facial paralysis with the acute mastoiditis; and the latent meningeal symptoms, especially after the patient apparently was on the road to recovery, after a double mastoidectomy makes this case interesting enough to report.

E. M., age 15 years, tall and slim, was admitted to our service at the Philadelphia General Hospital, May 18, 1928, with a diagnosis of acute mastoiditis and left-sided facial paralysis. The paralysis developed on the second day after the beginning of an acute otitis media. On May 10, or eight days before her admission to the hospital, following exposure, the patient developed an acute rhinitis, which persisted until May 16, or two days before admission, when there began a sudden, sharp, severe pain in her left ear. The pain was not relieved during the following two days under hot irrigation and external heat. On the day following the onset of acute pain there was noticed some bloody exudate from the canal. On the second day following the onset of acute pain, it was noted that the left side of her face was completely paralyzed, and she was referred to the hospital.

Clinical examination at the time of admission: The left side of her face is deformed, unable to close the eye, to raise the eyebrow, skin of forehead, or pucker the lips in whistling. There is severe tenderness to pressure at the tip of the mastoid. The external auditory canal is narrowed, containing a thin serosanguineous discharge, and after cleansing a small central pulsating perforation is visible. Temperature on admission, 101°; pulse, 90; respiration, 25; white count, 8,500; reds, 4,600,000; urine, negative. Nasal examination shows some mucopurulent discharge underneath inferior turbinate and in the middle meatus. The sinuses were not X-rayed or nasopharyngo-

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scoped. X-ray of the left mastoid shows cells to be hazy and walls still visualized. Right mastoid negative.

Facial paralysis during an acute mastoiditis is an indication for mastoidectomy, irrespective of other indications, such as sagging of the posterior superior canal wall, high temperature, mastoid pain and blood picture. The causes of facial paralysis during acute mastoiditis are probably due to direct pressure of pus because of a dehiscence in the Fallopian canal, or edema of the nerve due to inflammatory reaction of the bony structure about the nerve, and operation to relieve pressure, and to promote drainage is the safest procedure. For these reasons an immediate operation was decided upon.

Under gas ether anesthesia her mastoid was exposed, the periosteum was densely adherent, and separated with difficulty. Mastoid cells filled with sanguineopurulent material. They were thoroughly curetted, including removal of tip, which was soft, and the cavity was lightly packed with iodoform gauze and left open. Within 24 hours there was quite an improvement in paralyzed side and after three days she could wrinkle the forehead and almost whistle.

On May 21, the patient complained severely of an acute pain in her right ear. Examination revealed an injected and bulging drum-head and a paracentesis was performed under local anesthesia. This ear was treated with hot irrigations and local applications. The patient steadily began to improve and was out of bed on the twenty-eighth. Marked improvement in facial expression, the mastoid wound looked clean, and she was to be discharged on June 2, or 13 days after operation. During the night of June 2, pain and tenderness in the region of the right mastoid became suddenly very severe and also a marked increase in the amount of discharge. Temperature, 104°, pulse 140; white count, 20,300; polys., 90 per cent. X-ray of mastoid shows haziness of mastoid and breaking down of cell walls. The following day, white count, 25,400; polys., 93 per cent. At this time we decided to open the right mastoid. Under gas ether anesthesia the right mastoid was exposed. There was an unusual amount of bleeding from the soft parts and as soon as cortex was removed, there was very free bleeding, so much that constant suction was required during the time of operation. The mastoid was thoroughly curetted, and proper drainage established. The tip was broken down and removed. The wound was packed with iodoform and allowed to remain open. The left mastoid wound was examined at the same time, edges of old incision freshened and three sutures inserted. Patient returned in good condition. During that night temperature dropped to 99°, but the next day went up to 103° and then gradually came down by lysis.

White blood count the day following operation was 13,900. Blood culture sterile; polys., 74 per cent. Patient gradually improved. Temperature became normal five days after right mastoid operation and remained so until she was discharged from the hospital on June 20 and was instructed to report at my office for dressings.

Her nose and sinuses were treated daily from time of admission until the nasal cavities were free from pus and the nose clinically pronounced negative. She was dressed every second and third day and outside of some pain in her right eye she seemed very comfortable. At her last visit she seemed unusually happy and was driven out to the hospital to see her brother and everyone who knew her remarked how well she looked. On the night of July 1, her temperature went up to 102°, she complained of severe pain in her head, neck and over right eye, was unable to sleep and cried continuously. The neck seemed stiff and she was readmitted to the hospital.

Examination on readmission: Patient lies quietly, is somewhat stuporous, can be easily aroused to answer questions but prefers not to be disturbed. She says she has pains in her head. Full motion is present on left side of face, neck is rigid. Spinal puncture, 6 c.c. of fluid removed, flowing rapidly, but not spurting, turbid. Dr. George Wilson, the visiting neurologist, who saw the case at this time, at my request, reports the following: Patient complains bitterly of pain in her neck and head, says that the bright lights hurt her eyes. Neck is stiff and Kernig's sign is bilaterally present, plantar reflexes normal, patellar reflexes absent. She is not word-deaf, aphasic and does not have hemianopia, hands and feet are normal to her, pupils are about equal and react well to light.

Findings above cited, considered with spinal fluid report, makes diagnosis of meningitis certain.

Eye examination by Dr. Gabrio: External muscle rotation normal in all directions, convergence poor, pupils 2 m.m. react to light and accommodation. Media clear, disc oval at 90. No physiologic cup. Arteries and veins normal as to calibre and tortuosity. No fundus lesion. Under gas anesthesia we reopened the right mastoid, cleared it free from its granulations. The whole of the sigmoid sinus was uncovered. This exhibited no pathological changes. The bony roof of the mastoid was then exposed, the bone was solid and exposed dura looked healthy. This exploratory operation simply proved that the mastoid infection was probably not the actual source of her present trouble. The left was not disturbed. She was given 10 c.c. of one-half per cent formalin solution intravenously, 450 c.c. citrated blood, 100 c.c. antistreptococcal serum, 150 c.c. of 50 per cent glucose and

20 units of insulin. From the day of readmission till the end, daily spinal fluid was milky and culture showed streptococcic hemolyticus. Culture from mastoid, streptococcic hemolyticus. Blood culture sterile. The treatment of transfusion, antistreptococcic serum, spinal taps, and so forth, were kept up daily, but the patient finally passed out on July 7, seven weeks after the left mastoid operation and five weeks after right mastoid operation.

*Postmortem Findings:* Gross anatomical diagnosis: Double sphenoid and ethmoid infection; double mastoid operation. Brain basal meningitis; hydrocyhalus. Lungs, liver and aorta outside of swelling and congestion are negative. Spleen is enlarged, weighing 240 gm. Skull, on opening the skull cap, meningitis is noted at the base in the region of the medulla. The mastoid bones were opened from the interior of the skull and some pus found in the right mastoid. No break in the mastoid internally. The sphenoids and ethmoids were opened from the interior of the skull and both found to contain a great deal of purulent material. Judging from the gross examination of the skull, infection to the base of the brain was probably secondary to accessory sinus infection, especially sphenoids.

It has been generally conceded that purulent disease in a closed cavity, when drainage is insufficient, can and does cause focal infection or inflammation by direct extension. Probably in this case there was an element of mechanical pressure at first, and later extension by the blood or lymph channels to the meninges from the sphenoids.

No attention was paid to nasal accessory sinuses during her last admission; because the clinical picture of the nose was negative; and her acute nasal symptoms had entirely cleared up. From the postmortem report it would seem that the sphenoid sinus infection, a condition we had entirely overlooked, is probably more to account for the meningeal symptoms than the mastoid disease.

1610 Spruce Street.

## SHORT REPORTS OF FIVE INTERESTING CASES OF ACUTE MASTOIDITIS.\*

DR. CLARENCE H. SMITH, New York.

*Case 1:* William G., age 30 years, admitted to the hospital on Feb. 9, 1928. At that time he was unable to walk on account of violent vertigo, falling, nausea and vomiting. He gave the history of having had a stuffy feeling in his right ear six days previously. This was followed by severe pain in the ear and the surrounding area. Discharge in slight amount was noted three days after onset. During the night before his admission, he was seized with severe dizziness, he found it difficult to open his eyes, and he vomited repeatedly. On admission to the hospital, he was found to have his right eardrum bulging, with no discharge noted. Hearing on this side was almost nil, nystagmus was to the opposite, the healthy, side. Temperature was around 100°. He did not remember any former trouble with this ear. Myringotomy modified his symptoms, but as they persisted through the next 24 hours, a simple mastoid operation was performed. A sclerotic mastoid was found, with a few necrotic areas, one in the region of the antrum and another deep in the bone in the region of the anterior row of cells. On recovery from the anesthesia, his relief was extreme, the vertigo and other disagreeable symptoms having almost entirely disappeared. His recovery was rapid and he left the hospital in the usual time. A month later on examination, his right ear was found to be totally deaf, it was unresponsive to the cold caloric test and rotation showed a diminution of the nystagmus to 10 seconds when turned away from the diseased side, and 15 seconds when turned to that side. He still suffered from dizziness to a slight degree.

This man must have had an acute suppurative labyrinthitis accompanying his mastoid involvement, which ended happily with recovery after a simple mastoid operation, leaving him, however, a dead labyrinth.

*Case 2:* Another case which was not so fortunate in the outcome was that of Pasquale M., age 35 years, admitted to the hospital on Feb. 22, 1928, with an acute suppurative mastoid on the left side, and complaining of vertigo and nausea and vomiting. He had a nystag-

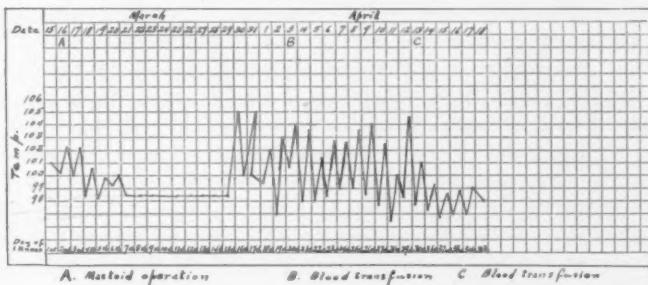
\*Read before the New York Academy of Medicine, Section on Otology, May 11, 1928.

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mus which was toward the diseased side, and hearing was present in that ear. He had had the acute ear inflammation about three weeks. His temperature was around normal. His mastoid was operated upon shortly after his admission, and extensive necrosis was found. Operation helped his symptoms considerably, his convalescence was average in character, and he left the hospital in the usual time. Thereafter he came to the dispensary to have his wound dressed. His hearing and nystagmus were noted each time he was seen, and he always showed some ability to hear. On March 18, or nearly a month after his mastoid operation, he was brought back to the hospital with fulminating meningitis, to which he succumbed in a short time.

It is probable the infection to his meninges came through his labyrinth. At no time, however, were we able to diagnose a dead labyrinth, and I do not consider that we could have done for him more than we did.

Jack T.



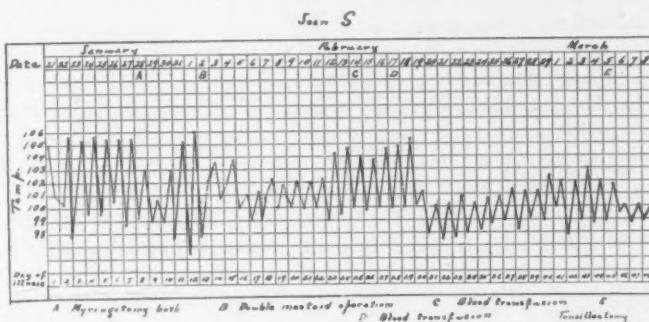
*Case 3:* Jack T., age 3½ years, had a right-sided simple mastoid operation performed on him on March 16, 1928. Convalescence was rapid and he left the hospital on the fifth postoperative day. Two weeks after the date of his operation the writer was notified that the child had had two rises of temperature to 105° from some unexplainable cause. He was brought back to the hospital for observation on April 1. At that time the mastoid wound appeared nearly healed, a moderate aural discharge was present and there was some enlargement of the cervical glands on the side of the operation. Temperature was 102°. The child appeared markedly anemic. A blood count showed hemoglobin reduced to 50 per cent and a leukocytosis of 14,000; urinalysis was negative, as was a blood culture. In view of the presence of a low grade of septic temperature and the marked

anemia, the child was transfused on April 3 with 150 c.c. of blood. The low grade of septic temperature persisted. On April 7, his blood was found to show 65 per cent hemoglobin, a leukocytosis of 14,600, and another blood culture taken was found to be negative. On April 8, the temperature peak became higher, ranging between 99° and 103.6°; on April 9, from 98.4° to 104.8°. At this time the cervical glands became markedly enlarged and painful. Then came two days of lower fever, but on the twelfth, the range again was from 98° to 104.6°, with a slight chill. Again it was noted that the cervical glands seemed unduly prominent on the high temperature days. Another blood count showed the leukocytosis had risen to 24,000, blood cultures were still negative. It seemed as if something radical should be done in the face of this picture. However, in view of the fact that in spite of his continued illness and fever the child looked remarkably well, it was thought advisable to once more transfuse him, and this was done, this time with nearly 250 c.c. of blood. The result was very satisfactory. The temperature dropped to normal permanently and the child left the hospital five days later. In a few more days the wound and ear were healed completely.

The diagnosis here lay between a possible sinus thrombosis and cervical adenitis. A thrombosis might have been the cause of the septic temperature and the clot may have been sterilized, aided by the blood transfusions. Or the cervical adenitis might have been responsible; this assumption was suggested by the looming up of the swollen glands when pyrexia was present. Anyway, there was ample justification for the diagnosis of a possible sinus thrombosis and the ligation of the jugular vein considered justifiable, and I considered myself fortunate in being able to avoid this by the use of more conservative methods.

*Case 4:* Joan S., age 2½ years, was first seen by me in her home on Jan. 27, 1928. She was a scarlet fever patient and the history given me was that she had been running a daily temperature from normal to over 105° for seven days. I found both eardrums bulging, the tonsils acutely inflamed and the cervical glands, particularly those on the right side, enlarged and painful. I did a myringotomy on both sides; this was followed by a recession of her fever for a few days, but the high range soon recommenced, the day I next saw her, Feb. 1, the temperature going from 96° to 106°. She had a double mastoid operation on Feb. 2, both sigmoid sinuses were exposed and found normal on inspection. For the next nine days the temperature was much lower, the daily rise being about 102°. Then followed three days when it reached 104° and over each day. A transfusion

of 160 c.c. of blood was then given as the hemoglobin had fallen below 50 per cent. This seemed to have no decided effect on her in any way except to help the hemoglobin, the temperature keeping up its daily rise to 104° or more. On the fifteenth postoperative day she was given another transfusion, this time with 250 c.c. of blood. When she got over the reaction from this transfusion, her temperature dropped, the daily rise being 101°. She continued with this much fever for a dozen more days, when the daily range began to reach a higher peak once more, around 103°. During all this time her cervical glands continued to be enlarged and tender and it was noticed that with this last recession of the high temperature that they had increased in size, and that the tonsils were subacutely inflamed. It was therefore decided to remove the tonsils to take from the cervical glands their infecting focus. I placed the child in the hospital and



removed her tonsils, one of which, the right, was densely adherent. The temperature then fell to normal and stayed there permanently.

In this case I evidently had had double acute suppurative mastoiditis of a virulent type, complicated by cervical adenitis, caused by infected tonsils. The transfusions were of inestimable benefit in lowering the temperature and cleared the case of the suspicion of sigmoid sinus thrombosis.

*Case 5:* Florence A., age 2½ years, was first seen by me on Feb. 15, 1927, at her home. She was suffering from a right side subperiosteal mastoid abscess, complicating an attack of pertussis in its acute stage. The child was operated on that day at her home. Nothing unusual was found, the inner table was necrotic, the sinus was necessarily exposed and looked healthy. Seven days later bronchopneumonia developed, and during a severe paroxysm of coughing

her sigmoid sinus ruptured. She had a severe hemorrhage, which was arrested by tight packing. Twelve days later the sigmoid sinus again ruptured during a coughing spell and she was nearly exsanguinated. She was then, on the twentieth postoperative day, moved to the hospital, as her pertussis had passed the infective period, and was transfused with 300 c.c. of blood. She was retransfused on the twenty-sixth day with the same amount of blood. Pyemic temperature developing, a blood culture was taken, which was reported positive for the streptococcus hemolyticus on the twenty-eighth day. Following the second transfusion her temperature improved materially, until about the thirty-sixth day, when it again became septic. Abscesses now began to appear on her body in various regions and her condition seemed desperate. On the forty-third day, after a third transfusion of 300 c.c. of blood, I ligated her internal jugular vein under novocain, not being able to use general anesthesia on account of unresolved bronchopneumonia. This made no material change in the child's condition. Abscesses kept appearing, in fact during the child's illness she had over two dozen abscesses, most of them containing large quantities of pus, and draining for long periods of time. The streptococcus hemolyticus was invariably found present.

On the sixty-eighth postoperative day, she was again transfused with 300 c.c. of blood. On the ninety-fourth day, after another transfusion, I operated on the left mastoid under novocaine, as this side had developed an infection. Bronchopneumonia now developed on the opposite side.

During all this time she was being treated with many adjuvants, such as injections of hypertonic salt solution, injections of autogenous vaccine, exposure to the Alpine light, and exposure to the sun through the vitaglass.

On the one hundred forty-eighth day, her condition having improved, and the original mastoid on the right side being open and discharging, with an aural discharge, I did a secondary mastoid operation. This did not heal and on the one hundred ninety-fifth day I performed a modified radical operation on her. At that time the condition was as follows: discharging sinus behind ear leading to exposed bone, discharge from canal, most of drum gone. One week later, or on the two hundred and first day, she was discharged from the hospital in very good general physical condition, the postaural wound was healed with the sinus solid and without deformity. Five weeks after this last operation the ear was completely dry.

This case has several interesting points: the rupture of the exposed sigmoid sinus, its repetition with nearly fatal hemorrhage, pyemia

with multiple abscesses, recovery after seven months' continuous sickness. I have seen sinuses rupture spontaneously in other cases, but in them there was enough to justify the diagnosis of septic phlebitis. In this child there was then no basis for assuming the presence of that condition, and I feel sure that the rupture was caused by the effects on the exposed vessel of the increased blood pressure brought about by severe paroxysms of coughing. I think this accident is a rare one and the possibility of it happening should be borne in mind. Tight packing of the mastoid wound in cases like this seems to be indicated.

2 East 54th Street.

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#### LOCAL TONSILLECTOMY BY THE LaFORCE METHOD.

DR. SAMUEL COHEN, Philadelphia.

So much has been written about the removal of tonsils, the technique has improved and been so simplified all over the world, that the tonsil operation, which was really a formidable one years ago, and classed by all as a major operation (still so classed), has gradually begun to be viewed as an easy operation and it really is a simple one. The student and the interne learn it in a short time and are soon able to perform one deftly and well. It should, however, be remembered by all who undertake this operation, no matter how simplified its technique, the great dangers are still present. Hemorrhage will occur no matter what method is employed and anyone undertaking to perform a tonsillectomy must be equipped and ready at all times to stop this alarming and well dreaded complication.

There is no end in improving anything and anything that will aid toward making a procedure simpler, easier and give better results should naturally be well received, and should be of value. Especially should any improvement in the technique be well received when we consider that the operation is to be performed on an adult. Most tonsil operations on adults are still performed by the dissection and

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snare method. Tonsil operations on adults are unquestionably more difficult and more tedious because of the greater adhesions. Therefore, in presenting this method it is felt that there is some improvement and therefore of bigger value over other methods. It is far more rapid than any other method, the postoperative appearance is better, and the patients state that it is not nearly so bad as what he or she has seen or heard of under other methods.

The removal of tonsils by this method is easily performed and the tonsil in its entirety is removed in about 80 per cent of the cases. Usually we can tell beforehand which tonsil will come out well and which will not by this method. If your tonsil is not adherent and everts easily, it will in about 100 per cent of the cases come out completely. It, therefore, follows that on the first examination of your patient, the eversion test—pressure on anterior pillar, etc.—is performed either at the office or in the dispensary. If it is found that the tonsils are adherent, especially if a history of frequent attacks of quinsy is given, it is best not to try this method. When one has used the LaForce method locally, and only succeeded in removing part of a tonsil, little or no harm has been done, as in most cases it is a very simple matter to grasp the remaining piece of tonsil in its bed, pull it toward the midline and remove it by the snare method: dissection in most cases being unnecessary. For the beginner, however, let me stress, as we stress to the postgraduate men in our school, that a method of dissection must first be thoroughly learned, because in some cases sooner or later a dissection and a snare method for complete removal of a tonsil is needed.

In an article published in *THE LARYNGOSCOPE*, February, 1923, certain points are stressed when using the LaForce method, and I wish to take the privilege here again to reiterate and lay stress upon an important point which I believe is too often overlooked by those using the LaForce instrument, and that is, "Do not use this instrument by the touch method only". Sight is a great aid when using the LaForce and if one is careful not only will the uvula and posterior pillars never be injured or removed, but—and this is of great value—the anterior pillars can be left completely intact. To repeat again, when using the LaForce, *sight must a'ways control the sense of touch*. It has been gratifying, indeed, to have men who are accustomed to use the LaForce watch us use this instrument and, picking up some new point, depart grateful and glowing.

The entire technique in detail will be given, because besides this method I wish to bring forward, it is desired also to stress another point, in the local removal of tonsils, and that is how to avoid the

entrance of infection into and around the field of operation. When I state that I have seen two patients die of infection of the neck following local tonsillectomy, one can easily see the grave importance of having as perfect asepsis as possible, even in this almost simple operation. Another point it is desired to emphasize is not to inject all your local anesthetic in each tonsil at once, but to inject one tonsil at a time, remove that tonsil and then inject the second one and remove it. This is a very good point and worthwhile noting. The patient will have less ill effects from one-half of the amount of a local anesthetic than he will from the entire amount. The strength novocain used is one-third of 1 per cent and no adrenalin is in it. The claim that a few minims of adrenalin incorporated in the novocain solution lessens hemorrhage at the time of operation is, in my experience, a fallacy. In addition most deaths reported from the use of novocain (when injected) as a local anesthetic, seem to have had adrenalin in it.

It is a good plan to have all patients bring a tooth brush and tooth paste with them, so that before the operation they can brush their teeth thoroughly. Immediately before the operation, the patient is given a mouth wash (I use KMNO-4 solution) and the patient thoroughly washes his mouth and gurgles. The patient is seated on the operating chair. The solution to be injected is then drawn up into a syringe (we use an all-glass syringe—Vim), drawing up about 4 c.c. of the solution and ready at hand. The solution we use (in order to prevent any possibility of error) is *prepared especially fresh for each patient*. A 1-gr. tablet of novocain is dissolved in 4 dr. of distilled water and boiled, the boiling apparently does not decrease the anesthetic value of the drug, and assures the operator of a freshly prepared, sterile solution, that he feels certain is novocain. *No adrenalin is added.*

A cotton swab is then dipped into a 3 per cent iodin solution and applied to the anterior pillar and crease between it and the tonsil at the lower half. A syringe full of the solution is then injected between the anterior pillar and the tonsil, care being taken not to get the solution outside the pharyngeal aponeurosis and the superior constrictor muscle, because the solution getting into this region and should infection occur you will find the infection to be in the pterygo-maxillary fossa and thus a dangerous complication has arisen. Dr. George B. Wood avoids this occurrence by pulling the tonsil out with a tenaculum, so presenting to full view the tonsil and its boundary lines, and as the needle is inserted hugging the tonsil with the needle point. Some men are so expert in their injection technique that they

can feel with their needle that the tonsil is being hugged, so avoid the pulling out of the tonsil, which is painful, and thus avoiding the necessity of swabbing cocaine over the tonsil. The placing of cocaine solution near the operator has led to many mistakes—in addition, we have heard of bad results following novocain injections which have been attributed to the operative field having been swabbed by cocaine first.

Only one injection is used (one needle puncture) and if a crypt is not struck the entire solution enters between the tonsillar capsule and the aponeurosis of the superior oblique muscle, and little or no pain will be felt by the patient during the operation.

It is to be noted that the patient must continue to keep his mouth open immediately after having the iodin applied, and *told to keep the mouth open until the operator is finished with the injection of novocain*, because if he closes his mouth and rubs the surface to be injected against a surface which is not perfectly sterile, as the back of the tongue, the chances for invasion of organisms while performing the injection is again present, which we desire to avoid. If the patient does close his mouth, the iodin is again applied over the area through which you expect the needle to go.

The patient is then told to *lie down on the operating table*. This is very important. Many operators have told me they have tried the LaForce method for local tonsillectomy and have failed. It is because they attempted to perform the operation in the sitting position. Therefore, we repeat that the patient is put on the operating table, head somewhat lowered, and told to breathe through the mouth, regularly and evenly. Patient is also told he or she will have a choking sensation for about 15 seconds (the time necessary for removal of a tonsil) with little or no pain. A mouth gag is next inserted and opened just a little wider than the breadth of the LaForce instrument (not too wide, as this causes breathing difficulty in itself). A small basin is ready on the patient's abdomen. The assistant holds a tonsil tenaculum with the fingers, rings in such a position that the operator can grasp it with a minimum loss of time when necessary. If the right tonsil is to be removed, the operator stands on the left side of the patient (righthanded operator). The tonsil is then engaged in the LaForce instrument, preferably following the steps advocated by me in my article on the subject (THE LARYNGOSCOPE, February, 1923). First position—the LaForce is used as a tongue depressor. Second position—the end is inserted behind the tonsil and the tonsil lifted up. Third position—the tonsil is pushed through the fenestra with the thumb of the left hand; and

fourth—the LaForce is slightly pulled toward the operator, thus exposing the free margin of the anterior pillar, and the instrument closed down on the offending tonsil so that the dull blade is *seen to go between the tonsil and the anterior pillar*, the screw regulating the blade is tightened down and the instrument lifted up. This whole procedure does not take more than 5 or 10 seconds, the tonsil is grasped with the tenaculum handed you by the assistant and the tonsil cut off with the sharp blade of the LaForce and removed from the mouth. The LaForce itself is then released and removed with the mouth gag, and at the same time the back of the patient (during the last procedure) is being lifted up to a sitting position by the assistant and patient told to spit out in the basin ready at hand. The entire procedure we have learned to perform in about 15 seconds. Patient sits up for several minutes until *all bleeding stops*. Our rule is not to attempt working on the second tonsil until the bleeding from the first tonsil has stopped itself or the operator stops it by appropriate measures before attacking the other tonsil.

The patient is then told to lie down again, the operator and assistant reverse sides, thus placing the operator where he can use his right hand to take out the left tonsil. The procedure is again repeated, as stated, for the removal of the first tonsil.

Most of my patients feel much better and there is less bleeding since we have adopted this method. It has now been used for three years in several hundred cases with marked pleasure and gratification to both patients and operator.

2009 Pine Street.

## THE PHILADELPHIA LARYNGOLOGICAL SOCIETY.

*Regular Meeting, October 10, 1928.*

**Simulated Unilateral Deafness.** Dr. George W. Mackenzie.

*(To appear in a subsequent issue of THE LARYNGOSCOPE.)*

Following his paper, Dr. Mackenzie demonstrated two tests for the detection of feigned unilateral deafness. The first test was one in which hearing is artificially eliminated in the good ear by a Barany noise producer, and in which test a person genuinely deaf in the other ear will raise his voice considerably while reading a newspaper or book. The second was the Stenger test, employed both with two similar tuning forks and an apparatus designed by the Graybar Electric Company. Both methods proved efficacious.

The subjects employed were one layman with complete deafness in one ear and two or three members of the Society, who were asked to persistently malinger deafness in one ear. The members, in spite of their acquaintance with the tests, when they were unable to see the forks, they fell in error and gave convicting responses, showing the reliability of the tests.

### DISCUSSION.

DR. BABBITT: I was glad to hear Dr. Mackenzie emphasize just at the beginning of his paper the psychological side of the patient. A patient who is malingering will put forth an effort to hear by the use of different gestures, whereas the patient who is really deaf will usually make every effort to hear without outwardly seeming to do so.

I appreciate very much Dr. Mackenzie's paper as he has done pioneer work in studying obscure ear conditions. I am very much interested in his description of the Stenger procedures and his audiometer illustrations, and would also ask the question whether tones usually carry through when taken by the audiometer on one side, and whether the audiometer could not be used in its simple form alone.

DR. HUNTER: I think a good psychologist is a great help in determining whether or not a patient is malingering.

A patient consulted me for impairment of the ear, following an automobile accident. She had had, as a child, otitis media. The drum, though retracted, was intact. After a careful test, I decided that she was a malingerer.

Some time later, a physician, who is an expert on medical legal affairs and a good psychologist, said to me, "By the way, the girl whom you examined was referred to me by an insurance company. I reported that she was malingering. The hole in the eardrum was not causing any deafness." In other words, although the doctor saw a perforation where none was present, and made no extensive fork test, not being an otologist, he reached the right conclusion by his knowledge of human nature.

What is the advantage of using the A-1 (435) forks for the Stenger test? Is it possible to use two forks of lower pitch and greater amplitude, which would not need to be activated so frequently?

DR. STOUT: During the war there were many men that feigned deafness in order to be dismissed from service. One method of determining whether they were really deaf or malingering was by the use of the stethoscope, used as two speaking tubes, the one going to the good ear being suddenly blocked and the subject will continue to hear with the deaf side. Another simple test we made was as follows: We took them over to a corner of the room and asked them confidentially how they felt and why they wanted to get out of the army. While we spoke, in the meantime, we kept lowering our voices and lowering them and the men kept answering up strongly. With this "whispering test" we determined whether they could hear well enough to remain in the army. Of course, there were some who knew about the various tests, and in these cases it was sometimes difficult to tell whether they really were deaf or malingering.

I am glad that Dr. Mackenzie brought these tests up and this audiometer

method of applying the Stenger test will help us, I think. I appreciated the paper very much.

DR. SHUSTER: Dr. Mackenzie mentioned one point in his paper about testing a malingerer which is also true in many ordinary non-malingering patients. Often a patient who appears to be suffering from a conductive deafness is asked to place his finger in the ear while his bone conduction is being tested and he will at once say that he hears the fork in the opposite ear. We expect the intensity to lateralize to the blocked ear, yet the patient reasons the other way and gives the wrong response. This fact being found so frequently, the reliability of this test in a malingerer is not so certain.

DR. WAGERS: A veteran who complained of total deafness in one ear, and who was believed to be a malingerer, was referred to me for examination. He denied hearing tuning forks by either air or bone conduction. The Galton whistle was not heard. All attempts to surprise or deceive him failed. I did a Barany test on this man and obtained absolutely no responses from turning nor from douching the supposedly deaf ear. As no one, not knowing the purpose of the Barany test, could possibly control the responses to stimulation, it was clear that this man had a non-functioning labyrinth, and this fact, taken into consideration with the results from the hearing tests, convinced me of the man's total deafness in the one ear. I believe the Barany test would be of value in all such cases.

DR. MACKENZIE (in closing): In reply to Dr. Babbitt's question as to syringing water into the ear in making the caloric test, it acts very much like the noise producer in the ear that is being syringed. In the presence of deafness when the water is being syringed into the left ear, the patient is made bilaterally deaf and will speak unusually loud. In fact, the first noise producer of Barany consisted of syringing mixed air and water into the canal of an ear. This was used quite successfully as a noise producer until on more than one occasion an assistant punctured the drumhead, with resulting middle ear and mastoid complications, when Barany devised the present model. Just preceding the development of the present model Barany noise producer, Dr. White, of New York, devised an instrument which blew air into the ear, making an intense noise.

As to the suggestion of Dr. Stout regarding the stethoscope test, it is a very excellent test, but I have not come to depend upon it nearly so much as the Stenger and some of the other tests referred to in the paper. Furthermore, in the early part of the paper I said, "There are so many that to describe them all would require more time than is ordinarily allowable for a single paper."

I quite agree with Dr. Wagers that in any case where there is a deafness combined with negative reactions from the vestibular apparatus, it must be a bona fide case and not a malingerer.

Dr. Shuster's observations correspond with mine, in that many patients have a preconceived notion that they should lateralize the Weber test to the better hearing ear even in the presence of obstructive deafness when produced artificially by stopping the ear with the finger. For this reason it is well to repeat the test many times before arriving at a definite conclusion.

Regarding Dr. Hunter's query as to the best type of fork for the Stenger test, I believe that the Bezold-Edelmann is the best, for the reason that it answers the test for which it was designed by Bezold and Edelmann, and that is loudness at close range and not being heard at, say, 8 or 10 inches from the ear. A higher pitched fork can be heard at a much greater distance and for that reason can often be heard on the hearing side when it is applied to the deaf side.

**Dehiscence of Posterior Wall of Sphenoid Sinus. Report of a Case.** Dr. Louis K. Elfman.

(To appear in a subsequent issue of THE LARYNGOSCOPE.)

#### DISCUSSION.

DR. STOUT: It just happens that I see quite a number of asthmatic patients in one clinic that I am associated with and I am convinced that they do not stand operative procedure as well as normal persons. From time to time we hear of

an asthmatic patient dying immediately after an operation which would not have been fatal to an average person. In ethmoidal and sphenoidal cases no packing is the rule; even a small amount may produce meningeal symptoms.

DR. COHEN: Dr. Elfman's case of dehiscence of the posterior wall of the sphenoid makes the third case that I have had personal experience with. In this case, there was no visible pus, the membrane being hyperplastic. We very well realized the precaution in operating upon asthmatics, but they are the chances we take. There was no intranasal packing and the main treatment for the complication was epsom salts, 50 per cent, enemas.

DR. DINTENFASS: The danger of meningitis incident to operations on the ethmoid and sphenoid can be materially lessened by the elimination of the whole or part of the nasal packing, especially in the superior and middle meati. Gauze in this region following such operative procedures may produce a damming back of secretions with an ascending infection and a tendency to meningeal involvement.

DR. MACKENZIE: I reported a case in the *Eye, Ear, Nose and Throat Monthly*, March, 1927, entitled, "Pronounced Enlargement of the Sella Tursica with Spontaneous Discharge of the Cerebro-Spinal Fluid from the Nose". The patient had a dehiscence in the roof of the sphenoidal sinus from an enlargement of the sella tursica because of a new growth. This patient would now and then spill out a large quantity of clear fluid from the nose that failed to stiffen the handkerchief, as a mucoid secretion does. The strange part of the case is that he eventually left us and later told of having his condition cured by some irregular, who used finger manipulation to the back of his throat.

DR. ERSNER: I had a case similar to Dr. Elfman's, the patient having a dehiscence of the posterior wall of the sphenoid. She came under our observation in 1925, at which time she complained of iritis in the right eye. Upon nasal examination we found a deflected septum and a hyperplastic left middle turbinate. A submucous resection was performed and the anterior end of the left middle turbinate was removed. Within 10 days the iritis subsided. On April 7, 1927, she again returned with an iritis in the right eye. Complete dental examination was made but no foci were found. Although the tonsils were small and no infection was grossly visible, it was thought best to remove them. Within two weeks after tonsillectomy, her eye condition cleared up. In January, 1928, the patient developed an acute rhinitis and a recurrent iritis. Further nasal study revealed pus in the posterior nares on the right side. A complete neurological examination was made but there were no ocular symptoms nor ocular palsies found. The only pronounced objective symptoms were nasal discharge and iritis.

X-ray report stated briefly: Hazy antrum and cloudy ethmoids on the right side.

Operative findings: Upon opening of the anterior wall of the sphenoid, there was a gush of thick, creamy pus, which was pulsating and offensive. There was about 1 dr. of pus. At this time, patient complained of syncope. After waiting for about 20 minutes, further examination was made and we found a dehiscence of the posterior wall. There was no escape of cerebral fluid; the dura was pulsating and appeared as though it were under pressure. The patient was sent back to her room in a state of shock. Within six hours, she developed a chill, a temperature of 103.4°, with a proportionate increase in pulse. Twelve hours later, patient became stuporous and went into coma. At time of expiration her temperature was 106°, and her pulse was very rapid. No postmortem was obtained. I am at a loss as to the actual diagnosis. It could not have been a cavernous sinus thrombosis for she did not at any time have any symptoms referable to the cavernous area. There is a possibility of an intradural abscess which might have ruptured when the extradural pressure was released, thus producing a diffuse meningitis.

I wish to congratulate Dr. Elfman upon the manner in which he presented the case.

DR. ELFMAN (in closing): This particular patient did not have any packing, only a bit of cotton at the tip of the nose to prevent dripping, and this cotton was removed when she was brought back to the ward.

*Regular Meeting, November 6, 1928.*

**Tumors of the Tonsil; Benign and Malignant.** Dr. Louis S. Dunn.

*(To appear in a subsequent issue of THE LARYNGOSCOPE.)*

DISCUSSION.

DR. DINTENFASS: I heard Dr. Dunn's paper once before in Allentown and was very much interested in it. I think he should be congratulated upon the general excellence of it.

In the consideration of the etiology and the various influences bearing on the condition, I believe the factor of irritation plays a very important part. This was brought home to me in the single case that came under my observation. The patient was a man, age 40 years, a barber by trade, and an incessant smoker. His tonsils were hypertrophied and repeatedly the seat of follicular inflammation. Curiously enough during these inflammatory attacks the right tonsil always suffered more than the left and showed greater evidences of disturbance and irritation. The disease began as an ulcerated patch on the right tonsil adjacent to the anterior pillar and gradually spread, involving the surrounding tissues and the glands of the neck. I advised a tonsillectomy long before an evidence of malignancy was present and I am convinced that had the factor of irritation been eliminated at that time, carcinoma would never have developed.

As to the period of life in which malignancy of the tonsil occurs, the essayist has correctly said that carcinoma is ordinarily found at the age of 50 years, while sarcoma at or slightly below 40 years. It must be remembered, however, that the age of the patient should not be relied upon to establish a diagnosis; cases having been reported as early as 18 months and as late as 80 years.

Malignancy of the tonsil is usually primary. This is in direct contradiction to the teachings of Ballenger and other writers of a decade ago, who thought that carcinoma of the tonsil was nearly always secondary to carcinoma of the tongue or faecal pillars. Quite recently Schlemmer, in experimental studies with dyes, and Richard Waldapfel, of the Viennese Clinic, have shown that the tonsils are an efferent and not an afferent organ and that because of the direction of the flow of lymph it would be impossible for tonsillar affections to originate from the tissue environment.

The site of neoplasm on the tonsil is of interest. Ross has pointed out that whenever epithelium normally or abnormally tends to change its type, such a change is more likely to produce epithelioma than the center of an epithelial area. This is well shown in malignant disease of the lips or anus, where carcinoma seems to have a predilection for the mucocutaneous junction. The same factor may be applied to the tonsil; the favorite location being at the junction of the epithelial surface of the tonsil and pillar. Such was the actual happening in my own case. This is a refutation of Conheim's idea. He believed, as the essayist has said, that carcinoma of the tonsil was due to a tucking in of the epithelium with a gradual shutting off of the enclosed cells.

In referring to the diagnosis and symptomatology we must not forget that malignancy and syphilis might be present simultaneously. Gummatus areas have long been known to act as predecessors of malignancy. Therefore, unless there is an immediate response to arsphenamin in supposedly luetic cases, malignancy should be suspected and investigated. It is also important to know that a lesion showing signs of healing does not disprove malignancy when adjacent glands are slightly enlarged, hard or noninflammatory.

I was glad to hear the essayist speak of the danger of biopsy. Sir St. Clair Thomson, MacKenty and others have warned us that removal of cancer tissue for diagnosis may produce trauma and a possible crushing of cancer cells into the open lymphatic channels, thus involving more remote regions and hastening the spread of disease.

The fact that cancer is more malignant than sarcoma was also mentioned. Pathologically this is worthy of note. Because of the predominance of the cellular element in cancer, there is a greater tendency for the cells to migrate than is the case in sarcoma, where the fibrous tissue is more abundant. This is in accord with the theory that carcinoma is the result of epithelial cells "gone astray".

As regards treatment, there is no doubt that with X-ray, radium, electro-dessication and their various combinations, a step forward has been made in the right direction, but despite glowing reports in isolated cases we all know how ineffectual the therapeutic measures have been. As in the eradication of malignancy elsewhere in the body, we must persevere and hope that the near future will bring about a solution of this grave problem.

DR. BUTLER: I want to congratulate Dr. Dunn on his excellent paper. We see these cases occasionally, but I haven't seen any get well. I had a case in which the microscope showed sarcoma of the tonsil. The Wassermann test of the blood was positive and the growth disappeared under salvarsan and mercury, but the patient died some months later. The cause of death could not be found at autopsy.

I think we are justified in using radium and the X-ray in these cases. Very few will get well, some will improve. If only from a psychological viewpoint, we must do something for them.

DR. WIEDER: It has been my experience to have three cases of malignancy of the tonsillar region come under my care. The most interesting was a patient sent to me originally with what was supposed to have been a retro-pharyngeal abscess. This abscess had been opened by one man, but he obtained nothing but a few drops of pus. It felt rather hard. I plunged a knife into it and got nothing but a few drops of blood. I was convinced that it was lymphosarcoma. After receiving a treatment with deep crossfire X-ray, the man became quite ill and developed a temperature of 103°. The family sent for a nose and throat man, who was very fond of a raw vegetable diet. He put him on a starvation diet for three or four days and the gland in the neck meanwhile decreased and they thought he was getting well. Underneath his arm, metastasis promptly developed and the man was dead three months later, without having a recurrence in the throat, proving that the diet had nothing to do with the disappearance of the glands of the neck, but that the X-ray was effectual and should have been repeated.

This case and another were in young people. The third case was carcinoma in a man, age about 50 years.

DR. HUNTER: I have nothing to add to what has been said about malignancy. I recall a case of benign tumor of the palate, discovered while doing a tonsillectomy. What we considered a large tonsil proved to be a tumor which had displaced the tonsil downward. On inspection the upper pole of the left tonsil appeared to be markedly hypertrophied, extending well up into the palate. On operation an encapsulated tumor was found embedded in the muscle tissue of the palate between the palatoglossus and palatopharyngeus muscles, and above the tonsil. It was not attached to the tonsil, and was easily enucleated, leaving the tonsil in place. The tonsil was considerably compressed downward. Both tonsils were then removed in the ordinary manner. The tumor was then cut in half. It had the appearance of a myxoma, at the upper end of which was a globular mass of red tissue of different consistency.

The laboratory report was as follows: Gross: Tumor of palate, 3.1x1.7x1.6 c.m., nodular, firm and encapsulated, grayish-yellow in color. There are attached to the capsule at one end of the tumor strands of muscle. Section: two distinctive types of tissue; one taking up about two-fifths of the specimen, grayish-yellow in color, glistening, and has the appearance of jelly of Wharton; however, it is more firm in consistency. This tissue surrounds an encapsulated nodule, which is entirely different from the tissue described above. It is red in color, glistening and fleshy in consistency. The capsule is fairly thick, almost 1 m.m. in some places. Left tonsil: 2.5x1.7x1 c.m., it is increased in consistency. Right tonsil: 1.2x1.7x1 c.m., similar to its fellow.

Micro: Tumor from palate. Myxofibroma with central area of necrosis. Tonsils: Subacute diffuse, recurrent tonsillitis.

Some years ago I saw a case in which what were apparently hypertrophied tonsils were removed. In a short time, the patient came back with tonsils that looked as large as before removal. The patient finally died, with the diagnosis, Hodgkin's disease.

*(To be continued.)*





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